

CLAIMS

Sub A7

1. A light output control circuit comprising:
 - a photodetector which detects the light output of a light-emitting device;
 - 5 a comparator which compares a light output detection value with a reference value;
 - a light output control device which controls the light output of said light-emitting device in a discrete manner in accordance with the result of
 - 10 said comparison output from said comparator; and
 - a switching circuit which counts the number of control actions performed by said light output control device, and which instructs said light output control device to perform control in accordance with a
 - 15 power-up mode until the number of control actions after starting the control reaches a predetermined value, and to perform control in accordance with a steady-state mode after the number of control actions has reached said predetermined value.
- 20 2. A light output control circuit according to claim 1, further comprising a clock control circuit which detects data to be supplied to said light-emitting device, generates a clock in accordance with the result of said detection, and supplies said clock as a timing
- 25 signal indicating control timing to said light output control device and said switching circuit.
3. A light output control circuit according to claim 2, wherein said switching circuit sets the amount of change of a control value per control action in said
- 30 light output control device in said power-up mode to a first amount of change, and sets the amount of change of the control value per control action in said light output control device in said steady-state mode to a second amount of change that is smaller than said first amount
- 35 of change.
4. A light output control circuit according to claim 3, wherein said switching circuit incrementally

reduces said first amount of change in said power-up mode over a plurality of stages.

5 5. A light output control circuit according to claim 4, wherein said first amount of change is reduced using a bisection method.

6. A light output control circuit according to claim 5, further comprising an update permit control circuit which permits said light output control device to update said control value in a prescribed cycle in said steady-state mode.

7. A light output control circuit according to claim 6, wherein a frequency band of a drive current for said light-emitting device is set narrower in said steady-state mode than in said power-up mode.

15 8. A light output control circuit comprising:
 a photodetector which detects the light output of a light-emitting device;
 a comparator which compares a light output detection value with a reference value;
20 a light output control device which controls the light output of said light-emitting device in a discrete manner in accordance with the result of said comparison output from said comparator; and
 a switching circuit which instructs said
25 light output control device to perform control in accordance with a power-up mode until said light output detection value, after starting the control, enters a window of a prescribed width, and to perform control in accordance with a steady-state mode after said detection
30 value has entered said window.

9. A light output control circuit according to claim 8, wherein the width of said window varies depending on temperature.

35 10. A light output control circuit comprising:
 a photodetector which detects the light output of a light-emitting device;
 a comparator which compares a light output

detection value with a reference value;

a light output control device which controls the light output of said light-emitting device in a discrete manner in accordance with the result of said comparison output from said comparator; and

a switching circuit which instructs said light output control device to perform control in accordance with a power-up mode until a control history of said light output control device, after starting the control, matches a prescribed pattern, and to perform control in accordance with a steady-state mode after said control history has matched said prescribed pattern.

11. A light output control circuit comprising:

a photodetector which detects the light output of a light-emitting device;

a comparator which compares a light output detection value with a reference value;

a light output control device which controls the light output of said light-emitting device in a discrete manner in accordance with the result of said comparison output from said comparator; and

a clock control circuit which detects data to be supplied to said light-emitting device, generates a clock in accordance with the result of said detection, and supplies said clock as a timing signal indicating control timing to said light output control device.

12. A light output control circuit according to claim 11, wherein said clock control circuit includes:

a data detection circuit which detects the data to be supplied to said light-emitting device;

a counter which outputs as said timing signal one of a plurality of bit outputs indicating a count value, and which stops counting when a carry or a borrow occurs in said count value; and

a gate circuit which applies a load signal for loading a prescribed value into said counter when a carry or a borrow occurs in said counter and when said

data detection circuit detects said data.

13. A light output control circuit comprising:
a photodetector which detects the light
output of a light-emitting device;
5 a comparator which compares a light output
detection value with a reference value;
a light output control device which
controls the light output of said light-emitting device
in a discrete manner in accordance with the result of
10 said comparison output from said comparator; and
an update permit control circuit which,
after said light output has stabilized, prohibits
updating of a control value for said light output from
the time that said control value is last updated, until
15 the time that a prescribed condition is satisfied.

14. A light output control circuit according to
claim 13, wherein said update permit control circuit
permits the next update after a predetermined time has
elapsed from the last update of said control value.

20 15. A light output control circuit according to
claim 13, wherein said update permit control circuit
permits the next update after data has been applied to
said light-emitting device a predetermined number of
times since the last update of said control value.

25 16. A light output control circuit according to
claim 13, wherein said update permit control circuit
permits updating of said control value when the
difference between the number of times the output of said
comparator has indicated that said control value should
30 be increased and the number of times the output of said
comparator has indicated that said control value should
be decreased has reached a predetermined value.

35 17. A light output control circuit according to
claim 13, wherein said update permit control circuit
permits updating of said control value when either the
number of times the output of said comparator has
indicated that said control value should be increased or

the number of times the output of said comparator has indicated that said control value should be decreased has reached a predetermined value.

5 18. A light output control circuit according to claim 13, wherein said update permit control circuit permits updating of said control value in accordance with a signal indicating a burst transmission.

10 19. A light output control circuit comprising:
a photodetector which detects the light
output of a light-emitting device;
a comparator which compares a light output
detection value with a reference value; and
a light output control device which
15 controls the light output of said light-emitting device in a discrete manner in accordance with the result of said comparison output from said comparator, wherein
after said light output has stabilized, a
frequency band of a drive current for said light-emitting
device is reduced in width.

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